Elephantulus pilicaudus – Karoo Rock Sengi


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Red List status (2016)	Data Deficient*
Red List status (2004)	Not Evaluated
Reasons for change	Non genuine change
Global Red List status (2015)	Data Deficient
TOPS listing (NEMBA)	None
CITES listing	None
Endemic	Yes

*Watch-list Data

This is a recently described new species of sengi endemic to South Africa (Smit et al. 2008).

Taxonomy

Elephantulus pilicaudus (Smit 2008)

ANIMALIA - CHORDATA - MAMMALIA - MACROSCELIDEA - MACROSCELIDIDAE - *Elephantulus* - *pilicaudus*

Common names: Karoo Rock Sengi, Karoo Rock Elephant-shrew (English)

Taxonomic status: Species

Taxonomic notes: On the basis of molecular, cytogenetic, and morphological evidence, *Elephantulus edwardii*, the only strictly South African endemic species, has been shown to comprise two closely related taxa, of which *E. pilicaudus* is newly described (Smit et al. 2008).

In the past, the single family was included in the order Insectivora, but now the family is in the well-defined monophyletic order Macroscelidea and the newly created supercohort Afrotheria. Currently, there are 19 living sengi species recognized in four genera. The soft-furred sengis or elephant-shrews include three genera: *Petrodromus* is monospecific, *Macroscelides* contains three species, and *Elephantulus* contains 11 species. The four species of giant sengis belong to the genus *Rhynchocyon*. The common name "sengi" is often used in place of elephant-shrew by many biologists to try and disassociate the Macroscelidea from the true shrews (family Soricidae) in the order Eulipotyphla. See www.afrotheria.net for additional information. For general biological information on all sengi species, consult accounts in Rathbun (2005, 2013) and Perrin and Rathbun (2013). For current and more technical information, search the on-line bibliography at www.sengis.org.

Assessment Rationale

This species was described in 2008, based almost entirely on molecular genetics, with weak support from external morphology. Thus, it is a highly cryptic species. It is considered a sister species of the Cape Rock Sengi, *Elephantulus edwardii*. There are only five known locations (with a total of 17 specimens), with two of these locations based on trapping after the year 2000, the other three are based on older museum specimens. Based on these five locations, this species mainly occurs in boulder habitats, but a sample of five locations is not sufficient to be conclusive. The five locations fall within an area of about 23,000 km^2, but this area may include areas not occupied by the species, and thus a fragmented distribution is possible. All sengi species studied to date occur at low densities, which suggests relatively few animals per unit area. Recent trapping efforts for this species indicate that this may be the case here. Without actual abundance and density data, more locations, habitat associations, and a proper assessment of habitat condition, there are not enough data to justify anything but a Data Deficient category. This species should be reassessed when further field surveys have been conducted.

Distribution

This newly-described species is endemic to South Africa in the Northern Cape Province and along the north-western edge of Western Cape Province. The species therefore appears limited to the Nama-Karoo vegetation biome in the south-central semi-arid Karoo of South Africa. The Nama-Karoo is subdivided into Bushmanland and the Upper and Lower Karoo bioregion vegetational units (Mucina & Rutherford 2006). Based on genetic evidence, *E. pilicaudus* is divided into two clades (Smit et al. 2008): Specimens from the Upper Karoo bioregion have a different genetic profile than those from the Lower Karoo bioregion. This genetic differentiation could be ascribed to its preference for highly fragmented boulder and rock habitats as also documented in the Cape Rock Sengi (*E. edwardii*) and Western Rock Sengi (*E. rupestris*) (Smit et al. 2007, 2010). Because there are only five known locations where the new species occurs, the distribution is not well understood, although it appears to be highly restricted. It is possible that the distributions of the Cape Rock Sengi and the Western Rock Sengi do not overlap with that of *E. pilicaudus*. Within the range of the new species, it is not likely to be continuously distributed because its boulder and rock habitats are highly fragmented, thus the area encompassed by the known locations is undoubtedly greatly exaggerated. All known locations are > 1,300 m asl.

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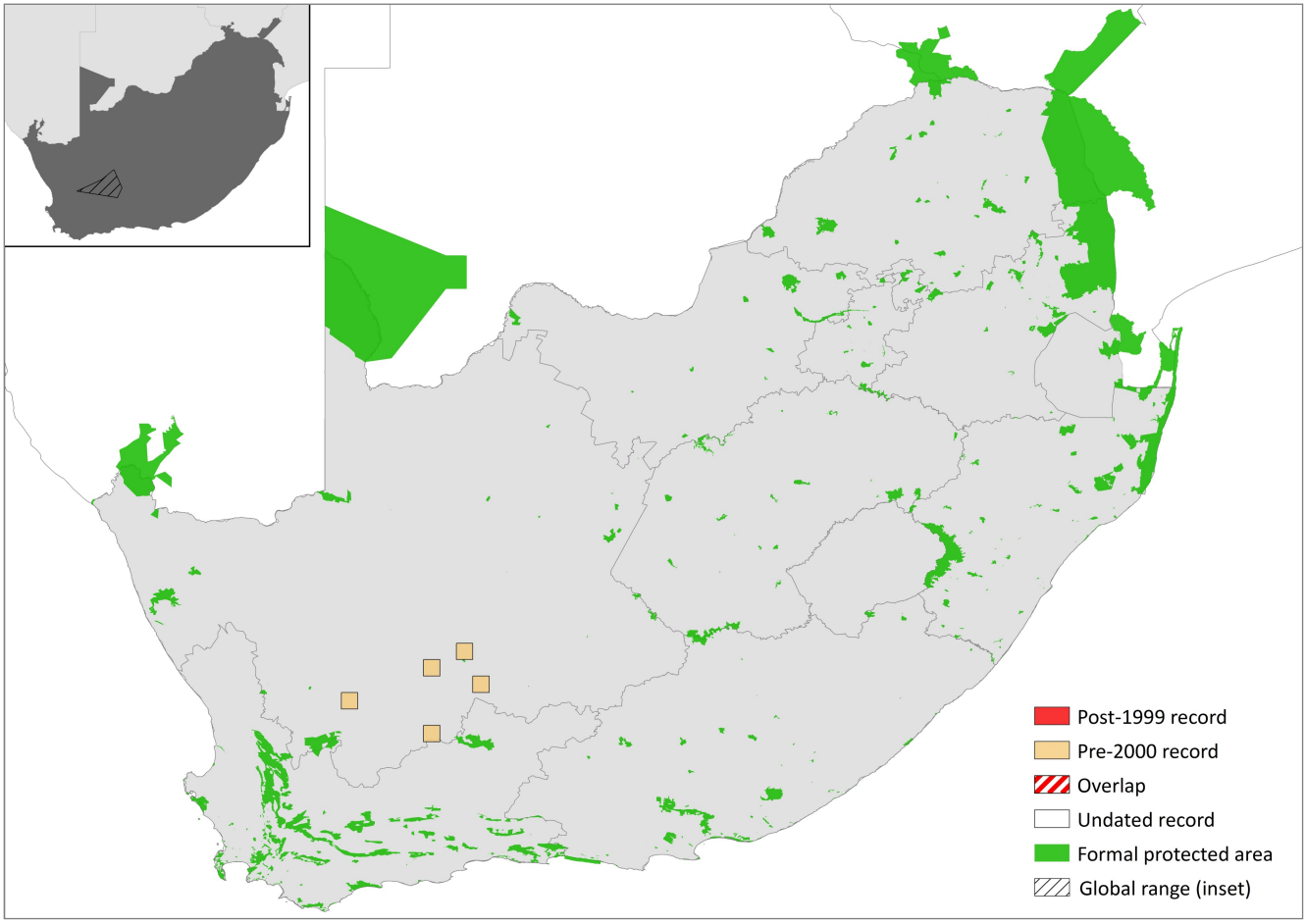

Figure 1. Distribution records for Karoo Rock Sengi (*Elephantulus pilicaudus*) within the assessment region

Table 1. Countries of occurrence within southern Africa

Country	Presence	Origin
Botswana	Absent	-
Lesotho	Absent	-
Mozambique	Absent	-
Namibia	Absent	-
South Africa	Extant	Native
Swaziland	Absent	-
Zimbabwe	Absent	-

The estimated extent of occurrence is 23,150 km^2, based on a modified minimum convex polygon area. This is almost certainly a huge overestimate in terms of actual occupancy.

Population

The abundance and population size is unknown. Despite numerous field excursions in the region, only 17 specimens of the new species from five locations in the Nama Karoo are known (three live trapped by Hanneline Smit; two trapped by Galen Rathbun, and 12 museum specimens housed in South African museums). In October 2008, a farm near Calvinia (Vondelingsfontein) in the Northern Cape Province of South Africa, where three live specimens were trapped in September 2006, was revisited by H. Smit and an effort to trap additional live specimens was unsuccessful. This reinforces the evidence of a species with a low abundance.

Current population trend: Unknown

Continuing decline in mature individuals: Unknown

Number of mature individuals in population: Unknown

Number of mature individuals in largest subpopulation: Unknown

Number of subpopulations: Unknown

Severely fragmented: Unknown

Habitats and Ecology

This species is confined to rocky or boulder-strewn habitats against mountain slopes or on ridges in the Nama-Karoo biome. Based on the five locations where it has been trapped, the species may have similar ecology to its sister species, the Cape Rock Sengi (*E. edwardii*), and the rock-dwelling Western Rock Sengi (*E. rupestris*).

Use and Trade

This species is not known to be utilised and has no national or international commercial value.

Threats

The species occurs in an area of ongoing livestock farming, which poses no direct threat. Because it occupies rocky and boulder habitats that are not suitable for most agricultural or urban development, there are no known current threats to the Karoo Rock Sengi. Although landscape change from hydraulic fracturing may occur in

the region, this is suspected not to be a threat to species in rocky habitat. Identifying potential threats and monitoring their impacts on this species is required.

Current habitat trend: Stable. This species occurs in rocky habitats that are unlikely to be extensively transformed.

Conservation

Concerted efforts should be made to assess the relative abundance of this species and further document its apparent limited distribution. It is unknown whether the species occurs in any protected areas other than the Karoo National Park, Beaufort-West. The species is limited to a region of local endemism and shares its distribution with other Karoo endemic mammals, such as the Riverine Rabbit *Bunolagus monticularis* and Grant's Rock Mouse *Aethomys grantii*, which may be an important consideration in identifying and establishing additional protected areas in the region. However, no conservation interventions can be recommended until further survey work reveals more accurate range and abundance estimates, as well as identifying threats.

Recommendations for land managers and practitioners:

- Expansion of the protected area network could secure habitat.

Research priorities:

- Field surveys to estimate occupancy, density and population size across its range. This should include confirming the likely lack of sympatry with other rock sengis (*Elephantulus edwardii* and *Elephantulus rupestris*).
- Studies on the life-history and ecology of the species.
- Research to assess the scale and impact of potential threats.

Encouraged citizen actions: Given the difficulty of identifying this sengi, even when in the hand, citizen science reporting is likely to be challenging. Citizens can, however, help in protesting irresponsible mining activities in the region.

Data Sources and Quality

Table 2. Information and interpretation qualifiers for the Karoo Rock Sengi (*Elephantulus pilicaudus*) assessment

Data sources	Museum records, indirect information (expert knowledge)
Data quality (max)	Suspected
Data quality (min)	Suspected
Uncertainty resolution	Expert consensus
Risk tolerance	Evidentiary

References

Mucina L, Rutherford MC. 2006. The Vegetation of South Africa, Lesotho and Swaziland. South African National Biodiversity Institute, Pretoria, South Africa.

Perrin M, Rathbun GB. 2013. Species accounts: Order Macroscelidea, Family Macroscelididae, Genus *Elephantulus*, *E. edwardii*, *E. intufi*, *E. myurus*, *E. rozeti*, *E. rufescens*; Genus *Macroscelides*; *M. proboscideus*. Pages 261–278 in Kingdon J, Happold D, Hoffmann M, Butynski T, Happold M, Kalina J, editors. Mammals of Africa, Volume I. Bloomsbury Publishing, London, UK.

Rathbun GB. 2005. Order Macroscelidea. Pages 22–34 in Skinner JD, Chimimba CT, editors. The Mammals of the Southern African Subregion. Third edition. Cambridge University Press, Cambridge, UK.

Rathbun GB. 2013. Species accounts: Genus *Petrodromus*, *P. tetradactylus*, Genus *Rhynchocyon*, *R. cirnei*, *R. chrysopygus*, *R. petersi*. Pages 279–287 in Kingdon J, Happold D, Hoffmann M, Butynski T, Happold M, Kalina J, editors. Bloomsbury Publishing, London, UK.

Smit HA, Robinson TJ, Van Vuuren BJ. 2007. Coalescence methods reveal the impact of vicariance on the spatial genetic structure of *Elephantulus edwardii* (Afrotheria, Macroscelidea). Molecular Ecology **16**:2680–2692.

Smit HA, Robinson TJ, Watson J, van Vuuren BJ. 2008. A new species of elephant-shrew (Afrotheria: Macroscelidea: *Elephantulus*) from South Africa. Journal of Mammalogy **89**:1257–1269.

Smit HA, Watson J, Jansen van Vuuren B. 2010. Relative importance of habitat connectivity in shaping the genetic profiles of two southern African elephant-shrews. Journal of Biogeography **37**:857–864.

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Details of the methods used to make this assessment can be found in *Mammal Red List 2016: Introduction and Methodology.*